



(19)

Europäisches Patentamt
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(11)

EP 0 940 277 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
08.09.1999 Bulletin 1999/36

(51) Int Cl.⁶: **B60J 5/06**, D03D 15/02,
B32B 7/12

(21) Application number: **99301628.6**

(22) Date of filing: **04.03.1999**

AA

(84) Designated Contracting States:
**AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU
MC NL PT SE**
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **05.03.1998 GB 9804548**

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(54) Reinforced closures for goods containers

(57) A composite material suitable for use as, or as part of, a closure for a vehicle body or other goods container, comprises a sheet of a metal-reinforced textile fabric, at least one face of the sheet having a flexible, weather-resistant covering. The metal reinforcement, which can be in the form of wire or filaments, can be present in the warp or weft (or both) of the textile fabric.

The weather-resistant covering can be a thermoplastic polymer (for example PVC) or other plastics material.

The invention also includes a curtain for a curtain-sided vehicle body or other goods container, which comprises a sheet of the composite material; means to suspend the curtain from an upper portion of the container; and means to secure the curtain in place with respect to the container.

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preferred that, whatever method is used to apply the PVC or other plastics material coating to the textile fabric, it should result in the plastics material becoming firmly bonded to the textile material, for example, by penetrating the interstices (or at least some of the interstices) between the filaments of the textile fabric.

[0013] Although the invention has been described above with reference to the plastics material being coated on the metal reinforced fabric by means of a plastisol method, other means can be used, for example using the plastics material in pre-formed sheet form and securing that sheet to the textile fabric by pressing, rolling or adhesive, or any combination thereof.

[0014] The warp and weft of the metal-reinforced textile fabric are conveniently arranged at a right angle to each other and, in use, the metal reinforcement can be disposed either vertically, horizontally or at some other angle with regard to the geometry of the curtain, though as goods container curtains normally require greater flexibility in a horizontal direction (to facilitate the folding of the curtain that occurs when the curtain is opened), it is preferable that the metal reinforcement be in the vertical direction (or at least in a substantially vertical direction), thereby to obviate or even avoid completely bending of the metal reinforcement.

[0015] The present invention includes alternatives in which the warp and/or weft are in a disposition other than horizontal and/or vertical with regard to the curtain. This form of the invention can enhance still further the slash resistance of the curtain of the invention.

[0016] In a further form of the invention the composite material contains two or more sheets of the textile fabric. This form can comprise, for example, an assembly of two sheets of the textile fabric in face-to-face relationship, the outer faces (or outermost faces where there are more than two sheets of the textile fabric) having a coating of flexible plastics material. An alternative structure comprises an assembly of two sheets of composite material according to the first aspect of the present invention, each sheet comprising a sheet of the textile fabric having on both faces thereof a coating of flexible plastics material and the two sheets of composite material being secured together at the interface between adjacent surfaces of plastics material. The number of metal-reinforced textile fabric sheets that can be used will depend on their flexibility and on the flexibility required in the closure; the greater the flexibility of the metal-reinforced fabric the greater the number of such sheets can be used.

[0017] Not all of the composite material embodiments referred to in the preceding paragraph are flexible enough for satisfactory use in a curtain-sided goods container. However, these more rigid embodiments are suited for use as structural panels for more rigid goods containers, for example motor vans.

[0018] In those embodiments of the composite material of the invention which contain more than one sheet of the textile fabric, it is preferred that the direction of the metal reinforcement be not identical in the two or several sheets. As stated above, it is usually not practicable to use the composite material in a disposition in which the metal reinforcement runs horizontal or substantially horizontal with respect to the curtain. Therefore, where two or more sheets of the textile material are used they should preferably be so arranged that the directions of the metal reinforcement in adjacent sheets are off set from each other by a small angle, for example an angle in the range 5° to 20°, for instance 10°.

[0019] With regard to the curtains that constitute the second aspect of the present invention, a sheet or sheets of composite material according to the first aspect of the invention can be used either for the whole area of the curtain or only for part of it. A disadvantage of using the composite material for the whole area is that it is then normally necessary to form holes in the composite material so as to pass bolts securing the curtain at its upper edge portion to supporting runners or sliders and, at its lower edge portion, to securement buckles; and formation of the necessary holes through the metal reinforced textile fabric can be inconvenient. Therefore, in an alternative form of curtain of the present invention the composite material does not extend as far as the upper edge portion of the curtain, the upper edge portion being provided, for example, by a sheet of conventional curtain material secured to the upper edge of the composite material. In practice, this latter arrangement does not detract substantially from the security provided by the curtain, because most attempts to slash conventional curtains are made against the lower portion of the curtain.

EXAMPLE

[0020] There is now described, by way of example, a slash-resistant composite material according to the present invention and suitable for use in a curtain of a curtain-sided vehicle body.

[0021] The composite material comprises a sheet of a steel-reinforced textile fabric having on both faces a pvc coating, the sheet of steel-reinforced textile fabric having a thickness of 1.5mm. The warp of the steel-reinforced textile fabric is of non-coated nylon yarn having a pitch of 2.5mm. The weft is of steel cable comprising three strands each of three filaments, the filaments having a diameter of 0.18mm and having a zinc coating.

[0022] In the following Table the data given relates to a textile fabric whose metal reinforcement is a plurality of steel filaments in the form of three strands, each comprising three filaments. The cable metal reinforcement is coated with zinc as a corrosion-resistant layer. The warp consists of non-dipped nylon yarn (940/2x2) which is woven with the steel cables in a square weaving pattern. However, if desired, other weaving patterns can be used.

[0023] The following Table shows, by way of example, characteristics of the textile fabric and its warp and its weft.

forced textile material.

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10. A composite material according to Claim 9, in which the direction of the metal reinforcement is not identical in said two or more sheets.
11. A composite material according to any of Claims 1 to 10, which is of sufficient flexibility to be used as a curtain.
- 10 12. A curtain for a curtain-sided vehicle body or other goods container, which comprises a sheet of a composite material as claimed in Claim 11; means to suspend the curtain from an upper portion of said container; and means to secure the curtain in place with respect to said container.
13. A curtain according to Claim 12, in which, in use, the flexibility of the curtain in the horizontal direction is greater than that in the vertical direction.
- 15 14. A curtain according to Claim 13, in which the difference of flexibility in the horizontal and vertical directions is effected by there being a preponderance of the metal reinforcement in the vertical direction.
- 20 15. A curtain according to Claim 12, 11 or 14, in which, in use, the metal reinforcement (or at least one of the metal reinforcements) is in a non-vertical disposition.
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ON EUROPEAN PATENT APPLICATION NO.**

EP 99 30 1628

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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10-06-1999

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